**Sample Tables:**

**Table: Students**

student\_id    student\_name      age   class\_id

1                       Alice                  18        101

2                       Bob                   17        102

3                       Carol                 18         101

4                       David                 17        103

**Table: Classes**

class\_id       class\_name

101                Math

102                Science

103                History

**Table: Scores**

student\_id           subject score

1            Math              90

1           Science            85

2            Math              78

2           Science            92

3           Math                88

3           Science            79

4            History            95

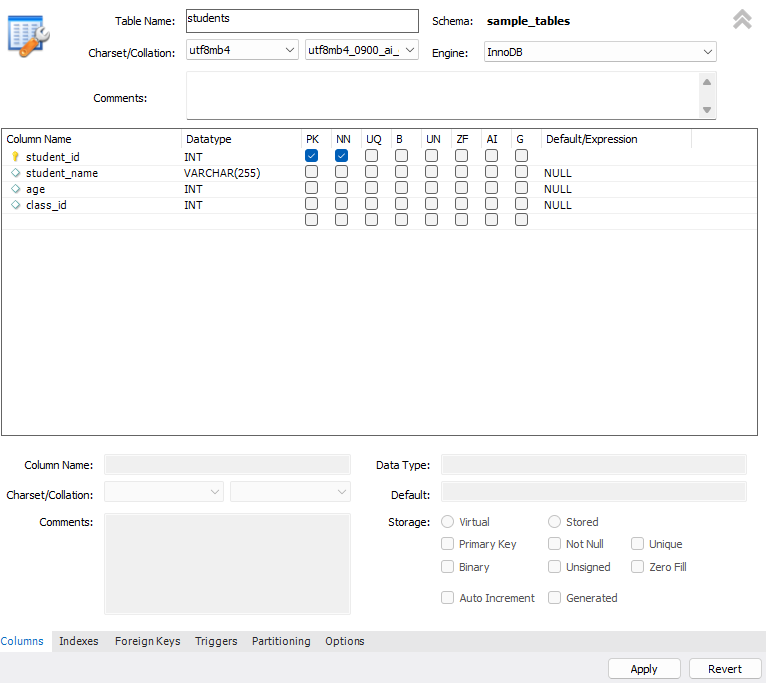
Step 1:

1. Create database

CREATE DATABASE Sample\_Tables;

USE Sample\_Tables;

1. Create table :
2. Students table created



CREATE TABLE Students (

student\_id INT PRIMARY KEY,

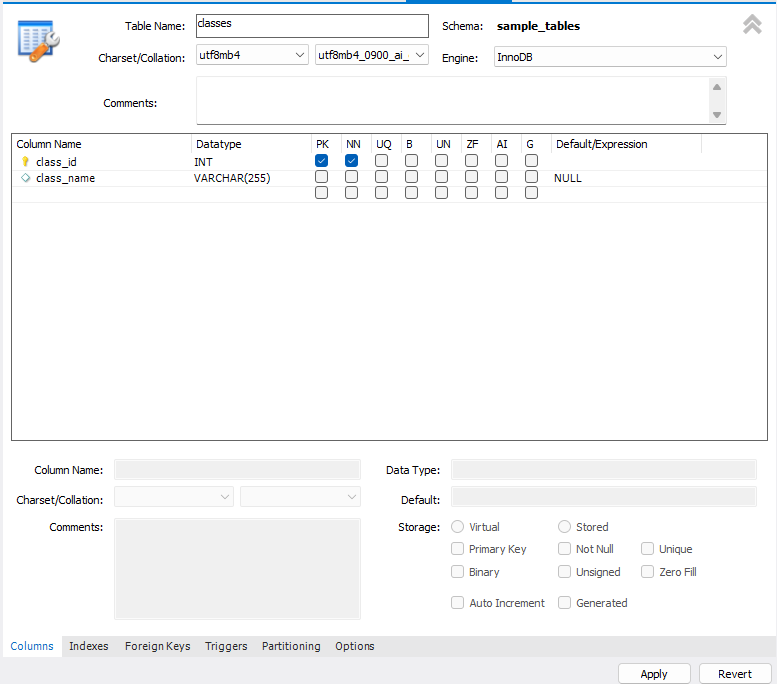
student\_name VARCHAR(255),

age INT,

class\_id INT

);

1. Classes table created



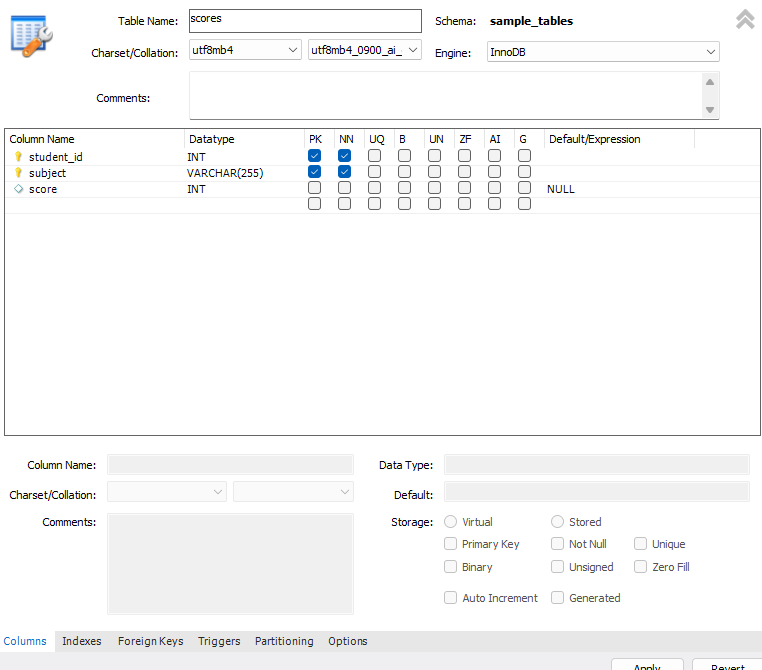
CREATE TABLE Classes (

class\_id INT PRIMARY KEY,

class\_name VARCHAR(255)

);

1. Create scores table



CREATE TABLE Scores (

student\_id INT,

subject VARCHAR(255),

score INT,

PRIMARY KEY (student\_id, subject),

FOREIGN KEY (student\_id) REFERENCES Students(student\_id)

);

**Queries :**

1. Question: For each class, find the student(s) who scored the highest in Science.

SELECT c.class\_name, s.student\_name

FROM Students s

JOIN Scores sc ON s.student\_id = sc.student\_id

JOIN Classes c ON s.class\_id = c.class\_id

WHERE sc.subject = 'Science'

AND sc.score = (SELECT MAX(score) FROM Scores WHERE subject = 'Science');



1. Question: List the names of students who scored lower in Math than their average Science score.

SELECT s.student\_name

FROM Students s

JOIN Scores math\_scores ON s.student\_id = math\_scores.student\_id AND math\_scores.subject = 'Math'

JOIN (SELECT student\_id, AVG(score) AS avg\_science\_score FROM Scores WHERE subject = 'Science' GROUP BY student\_id) avg\_science ON s.student\_id = avg\_science.student\_id

WHERE math\_scores.score < avg\_science.avg\_science\_score;



1. Question: Display the class names with the highest number of students who scored above 80 in any subject.

SELECT c.class\_name, COUNT(DISTINCT s.student\_id) AS num\_students\_above\_80

FROM Students s

JOIN Scores sc ON s.student\_id = sc.student\_id

JOIN Classes c ON s.class\_id = c.class\_id

WHERE sc.score > 80

GROUP BY c.class\_name

HAVING COUNT(DISTINCT s.student\_id) = (SELECT MAX(num\_students\_above\_80) FROM (SELECT COUNT(DISTINCT s.student\_id) AS num\_students\_above\_80

FROM Students s

JOIN Scores sc ON s.student\_id = sc.student\_id

WHERE sc.score > 80

GROUP BY s.class\_id) AS temp);



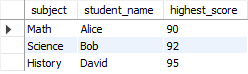
1. Question: Find the students who scored the highest in each subject. \*/

SELECT sc1.subject, s.student\_name, sc1.score AS highest\_score

FROM Scores sc1 JOIN Students s ON sc1.student\_id = s.student\_id

WHERE (sc1.score, sc1.subject) IN ( SELECT MAX(sc2.score), sc2.subject

FROM Scores sc2 GROUP BY sc2.subject );



1. Question: List the names of students who scored higher than the average of any student's score in their own class.

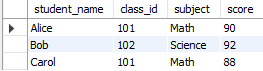
SELECT s1.student\_name, s1.class\_id, sc1.subject, sc1.score

FROM Students s1 JOIN Scores sc1 ON s1.student\_id = sc1.student\_id

WHERE sc1.score > ( SELECT AVG(sc2.score) FROM Students s2

JOIN Scores sc2 ON s2.student\_id = sc2.student\_id

WHERE s2.class\_id = s1.class\_id);



1. Question: Find the class(es) where the students average age is above the average age of all students.

SELECT c.class\_name

FROM Classes c

JOIN Students s ON c.class\_id = s.class\_id

GROUP BY c.class\_name

HAVING AVG(s.age) > (SELECT AVG(age) FROM Students);



1. Question: Display the student names and their total scores, ordered by the total score in descending order.

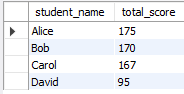
SELECT s.student\_name, SUM(sc.score) AS total\_score

FROM Students s

JOIN Scores sc ON s.student\_id = sc.student\_id

GROUP BY s.student\_name

ORDER BY total\_score DESC;



1. Question: Find the student(s) who scored the highest in the class with the lowest average score.

SELECT s.student\_name

FROM Students s

JOIN Scores sc ON s.student\_id = sc.student\_id

WHERE s.class\_id = (SELECT class\_id FROM (

SELECT class\_id, AVG(score) as avg\_score

FROM Scores

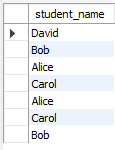
GROUP BY class\_id

ORDER BY avg\_score ASC

LIMIT 1

) AS lowest\_avg\_class)

ORDER BY sc.score DESC;



1. Question: List the names of students who scored the same as Alice in at least one subject.

SELECT DISTINCT s.student\_name

FROM Students s

JOIN Scores sa ON s.student\_id = sa.student\_id

WHERE sa.score = (SELECT score FROM Scores WHERE subject = (SELECT subject FROM Scores WHERE student\_id = 1) AND student\_id = 1);

1. Question: Display the class names along with the number of students who scored below the average score in their class.

SELECT c.class\_name, COUNT(\*) AS num\_students\_below\_avg

FROM Students s

JOIN Scores sc ON s.student\_id = sc.student\_id

JOIN Classes c ON s.class\_id = c.class\_id

WHERE sc.score < (SELECT AVG(score) FROM Scores WHERE subject = sc.subject)

GROUP BY c.class\_name;

